

WATER AND DIVE RESCUE SERVICES

EXECUTIVE DEVELOPMENT

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ABSTRACT

The City of Lighthouse Point is a boating community located on the southeast coast of Florida, directly on the intercoastal waterway. Along with water related activities comes occasional water related accidents such as drowning, accidents, and capsized boats. The problem facing the Lighthouse Point Fire Rescue Department is determining what effective and cost efficient water rescue service, and in particular public safety diving, can be provided. The purpose of this research project was to identify an appropriate level of water rescue service, and in particular public safety diving, that can be provided to the City of Lighthouse Point. Evaluative research methods were employed to answer the following questions:

1. What federal regulations, Florida statutes, and NFPA standards are applicable to public safety dive rescue?
2. What training and certifications are needed to form a public safety dive team?
3. How do other fire rescue departments in Florida provide public safety dive rescue services?
4. What factors must public safety dive rescue personnel consider when conducting a hazard analysis and risk assessment?

The procedures used to complete this research included a literature review of rescue magazines, periodicals, books, the internet, federal laws, Florida State statutes, and a written survey of Florida fire chiefs.

The results of this research found that there were no federal regulations or Florida statutes applicable to public safety dive rescue. NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents, 1999 Edition*, identifies recommended

practices for dive rescue. There are three distinct levels of training required by dive rescue teams--awareness, operations, and technician levels.

Recommendations included that fire departments located in jurisdictions where bodies of water have the potential for drownings should train all firefighter/paramedics at least to the operations level, and the fire departments should have access to a reliable public safety dive rescue team.

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INTRODUCTION

The City of Lighthouse Point is a boating community located on the Southeast coast of Florida, directly on the intercoastal waterway. The City is laced with 18 miles of canals that have quick access to the Atlantic Ocean. Numerous amounts of water related commercial and recreational activities occur all hours of the day, each day of the year. Along with water related activities comes occasional water related accidents such as drownings, collisions, and capsized boats. The problem facing the Lighthouse Point Fire Rescue Department is determining what water rescue service, and in particular public safety diving, we can provide.

The purpose of this research project was to identify an appropriate level of water rescue service that we can provide to the City of Lighthouse Point. A thorough and comprehensive research was conducted using evaluative research methods to answer the following questions:

1. What federal regulations, Florida statutes, and NFPA standards are applicable to public safety dive rescue?
2. What training and certifications are needed to form a public safety dive team?
3. How do other fire rescue departments in Florida provide public safety dive rescue services?
4. What factors must public safety dive rescue personnel consider when conducting a hazard analysis and risk assessment?

The procedures used to complete this research included a literature review of magazines, periodicals, textbooks, the internet, federal laws, Florida State statutes, and a written survey of Florida fire chiefs.

BACKGROUND AND SIGNIFICANCE

Lighthouse Point is a water community and water accidents do occur, although infrequently. When they do occur the Lighthouse Point Fire Rescue Department is the primary response agency. The City has 18 miles of canals aligned with houses. Large boats up to 100' in length docked behind palatial mansions is not uncommon. Water and boating activities are abundant.

According to Lighthouse Point Fire Rescue run reports in the last five years water rescue calls have included capsized boats, unoccupied drifting boats, persons falling off docks, missing persons last seen near water, drownings, occupied and unoccupied vehicles in canals, and one call of a dredge worker buried under the bottom of a five foot deep canal. Additionally, being on the southeast coast of the United States, the area is subject to devastating hurricanes and the associated flooding and water related problems that can cause loss of life and the need to rescue persons from water hazards. Yet, despite the obvious perceptive need for a water rescue service, the infrequent amount of calls for water rescue, and in particular dive rescue, does not warrant the same attention paid to fire and emergency medical responses. The training that rescue persons receive and the equipment purchased must be proportional to the calls anticipated. Large fire rescue departments can dedicate persons to dive teams, other technical rescue teams, and hazardous materials teams that have become popular in the fire service. As a small department, resources are much more limited and these limited resources must be allocated very carefully. Depending on mutual aid for water and dive rescue from a large department may be necessary. However, the response time must be fast enough to attempt a successful rescue. In most situations, an airless person under water suffers brain damage in four to six minutes. The problem

is not water recovery mode—it is water rescue mode. Again, we must have a water rescue capability that is useful with utilization of existing resources. A fire rescue agency must have the ability to utilize in-house resources or mutual aid resources to respond to water emergency incidents.

The City of Lighthouse Point is a waterway community with a population of 13,000 residents living in an area of three square miles. According to Lighthouse Point records, the department responded to 1641 emergency calls in 1999, with 80% of them being medical. Lighthouse Point Fire Rescue has 25 employees, 22 in operations, 2 chief officers, and 1 secretary. The department responds to fire, emergency medical, hazardous materials, and rescue calls. The response is augmented by other fire departments during hazardous materials and technical rescue incidents. The department conducts annual fire inspections of all commercial facilities, as well as, multi-family residential units. Most proficiency training is conducted in-house by Lighthouse Point Fire Rescue personnel. The operations section consists of three shifts, where firefighter/paramedics work 24 hours on-duty and 48 hours off –duty. The duty week is 48 hours. Eighteen of the 22 firefighters are cross trained as firefighter/paramedics, with the other four cross trained as firefighter/EMTs. Vehicle maintenance is also performed in house.

The Executive Development course in the Executive Fire Officer Program at the National Fire Academy includes a section on Managing Creativity, and in particular “Resource Myopia”, which is the lack of appreciation for resources. The Lighthouse Point Fire Rescue Department has many employees who participate in water recreational activities such as diving, and others perform as lifeguards in their second

jobs. This tremendous resource should be exploited to enhance the water and dive rescue capability.

LITERATURE REVIEW

A literature review for this project was performed and it focused on separating fact from fiction of water and dive rescue training and certification requirements. Information was researched from the National Fire Protection Association publications, fire service journals, magazines, books, the internet, water rescue industry training and equipment catalogs, federal laws, and Florida state statutes. Pertinent information was consolidated and included in this report.

National Fire Protection Association Standard

The National Fire Protection Association (NFPA) Standard 1670, *Operations and Training for Technical Rescue Incidents* (1999), contained recommended practices and guides developed through consensus for technical rescue incidents. Water rescue is considered a technical rescue incident and is included in the standard. NFPA 1670 (1999) further subdivides water rescue into four categories: dive rescue, surf rescue, swift water rescue, and ice rescue. The NFPA (1999) does not verify the accuracy of any information or the soundness of any judgments contained in NFPA Standards. Nor, does the NFPA (1999) have any power to enforce compliance with this standard in the operations and training for water rescue incidents. The purpose of the standard is to assist the authority having jurisdiction in assessing a technical rescue hazard within a response area and to establish operational criteria (NFPA, 1999). The standard requires the authority having jurisdiction to evaluate the effects of severe water, extreme water conditions, and other difficult situations to determine whether the present training

program has prepared the organization to operate safely. NFPA 1670 (1999) specified that the authority having jurisdiction shall ensure public safety divers have certification from a nationally recognized agency. The curriculum for such certification shall be orientated toward the needs and operational requirements of public safety diving (NFPA, 1999).

In 1998 one firefighter drowned on duty while attempting to save two drowning victims (Fahy, LeBlanc, & Washburn, 1999). And, one firefighter drowned during a diving training exercise in 1999 (Fahy & LeBlanc, 2000).

Federal Emergency Management Agency

The *Incident Safety Officer Student Manual* (FEMA, 1995) was reviewed for safety information relating to water rescue incidents. There was one specific item referenced relating to the water rescue incidents. The *Incident Safety Officer Student Manual* (FEMA, 1995) specified that the incident safety officer must have knowledge to understand hazards inherent at a typical incident response. The example given FEMA (1995) for knowledge required for special operations was –safety lines staffed at a water rescue and use of technical experts.). Three federal laws referenced as applicable to safety officer duties were: 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*; 29 CFR 1910.1030, *Occupational Exposure to Bloodborne Pathogens*; and 29 CFR 1910.146, *Permit Required Confined Spaces*. No federal laws were found in this document nor in the federal register concerning public safety dive rescue.

Technical Rescue and Industry Standards

Comeau (2000) wrote that the risks that fire departments are exposed to have changed, and that rivers make water rescue and dive teams a necessity. In a review of

advertisement materials from Dive Rescue International (1998), dive training can be customized and designed to meet the need of departments. Customized programs vary in duration and cost. Training length for the Dive Rescue 1 program is three days. Diving and surface personnel learn to apply the latest in techniques in underwater rescue and recovery. Dive Rescue 1 teaches the fundamentals of dive operations from scene evaluation through incident debriefing and prepares public safety divers and surface support personnel to respond effectively to water incident scenes. Program topics include overview of public safety drowning accidents; selecting, training, and equipping dive teams; dealing with family, media, and other agencies; search pattern fundamentals, victim retrieval tactics; responding to vehicle accidents; accident scene documentation; and an introduction to specialized equipment. Persons must be certified divers before they can participate in programs. (Dive Rescue International, 1998).

Research revealed that sport divers are not sufficiently trained to act as rescue divers. The example given was to imagine an incident where a sport certified open water diver was in charge of a dive operation in 135 feet deep water in zero visibility (Trueblood, 2000). Additionally, research found that team leaders need advanced search and rescue training such as Dive Rescue Specialist II or its equal. Also, special medical dive related training, such as med dive or equal, should be obtained for personnel (Trueblood, 2000).

The research revealed that the most important self-contained underwater breathing apparatus (SCUBA) course you will ever take is your basic certification course. It is the one that identifies the tools to survive as a SCUBA diver and provides the foundation to build on (Berry, 2000). Additionally, Berry (2000) identified that proficiency level

standards are mastered through training, and standards form the basis of Professional Level Performance. Berry (2000) identifies that having an acceptable level of performance is imperative because it not only determines the success of a mission, it can be the determining factor between life and death as well.

Nemiroff (1992) discussed the duration of submersion a person can withstand without permanent brain damage. Although the time cannot be determined exactly, the article did report that cold water drowning incidents differ from those occurring in warm water. Nemiroff (1992) identified that the majority of drowning and near drowning that occur in the United States do so in backyard swimming pools, and the neurological survival time is usually limited to 4 to 6 airless minutes and morbidity is high. The accepted practice of care in the United States has been to attempt resuscitation of any cold water near drowning victim if the victim has been submerged for one hour or less in water 70 degrees F or colder. The review revealed that cold water near drowning victims have higher survivability rates. In the book *Paramedic Emergency Care* it was found that the concept of developing brain death after four to six minutes without oxygen is not applicable in near drowning victims in cold water. However, persons under water over 60 minutes usually cannot be resuscitated (Bledsoe, Porter, & Shade, 1997). Also, a better survival rate is found in clear water than in muddy or swampy water. Studies showed that other injuries such as burns, head injuries, and bone trauma significantly reduced drowning survival rate (Nemiroff, 1992).

In an article *Emergency Scene Safety Compassion Kills*, Fleming (1993) wrote about his encounter and feelings during a dive operation he participated in. No other dive team members were present except Fleming (1993) and another diver, and none of the ground and boat support persons had received dive rescue awareness training.

Therefore, the communication line system between the boat and divers could not be utilized and communications below the surface was absent. The water was warm and visibility was zero. Fleming (1993) knew that the victim had no chance of survival, however, he was urged by compassion and entered a rescue mode. The vehicle that the victim was in was found but the victim was not located. Fleming (1993) almost got trapped by the vehicle and began to panic. He quickly regrouped and was able to escape and return to the surface. The dive operation was put on hold until the next day when a dive team could be convened and initiate a body recovery mode (Fleming, 1993).

Department of Health and Human Services (DHHS)

DHHS (2000) reported that a firefighter/paramedic drowned during an underwater self contained underwater breathing apparatus (SCUBA) training drill. The victim was one of four divers taking part in the drill in near zero visibility water on the bottom due to silt and mud. The victim originally received an open water diver certification in 1997. The victim had also passed the fire departments annual certification and was considered a technician according to fire department policy. The cause of the death was accidental drowning. The DHHS (2000) report gave four recommendations to prevent another reoccurrence.

Recommendation #1: Fire departments should review and update policies and standard operating procedures to incorporate the information contained within NFPA 1670-1999, *Standard on Operating and Training for Technical Rescue*, as appropriate.

Recommendation #2: Fire Departments should consider that whenever water based training evolutions are conducted, all participants have practiced the specific evolution

in a controlled environment such as a swimming pool before attempting the evolution in open water.

Recommendation #3: Fire departments should ensure that positive communication is established between all divers and those who remain on the surface.

Recommendation #4: Membership of the National Fire Protection Association should consider adding relevant sections that establish minimum job performance requirements for rescue technicians engaging in public safety diving activities during the next adoption cycle of NFPA 1006, *Standard for Rescue Technician Professional Qualifications*.

The DHHS (2000) report goes further to note that many of the skill and performance requirements found in recreational dive programs are also found in public safety diving. As such, it has been a common judgment with the fire service that recreational divers can function as rescue divers on organized dive rescue teams. National standards need to delineate the functional differences between fire department personnel who are certified to a recreational standard and those divers who are trained and possess the skills needed to operate at a level necessary to deliver public safety diving services. In the absence of any guidance departments attempt to develop policies and procedures that might not take full advantage of the collective knowledge and experience base than can be provided by including relevant job performance skills in a single document such as NFPA 1006, *Standard for Rescue Technician Professional Qualifications*.

Summary of Findings and Observations of Others

NFPA 1670 (1999) was found as the main document for information on dive rescue relative to fire departments. Information in Federal and State statutes were not found in

detail. The review found that diving is hazardous to the diver and the benefits must be measured against the risk before a dive operation is initiated. Victims found in colder water have better chance of survival. The review revealed that firefighters who are recreational divers should not be automatically considered trained and certified to be public safety divers.

PROCEDURES

This research project employed evaluative research methods to determine and clarify what is happening presently with public safety dive rescue in fire departments and to identify appropriate service. The procedure used to complete the research paper included a literature review of the National Fire Protection Association publications, fire service journals, magazines, books, the internet, federal laws, and Florida statutes. A review of several water rescue industry training and equipment catalogs was conducted, and a survey was given to Florida fire chiefs concerning water rescue services they provide. Lighthouse Point Fire Rescue records were reviewed concerning water rescue incidents occurring in the City in the last five years. The dive rescue companies that information was obtained from were not identified so as not to give the reader the perception of endorsement or non endorsement of their organization. Also, the fire chiefs and fire departments that participated in the survey were not identified individually. Pertinent information was consolidated and included in this report

Literature Review

The literature review was initiated in April 2000 by researching trade magazines that were on hand in the fire department. National Fire Protection Association (NFPA) standards were researched, as well as, other publications from the NFPA. Publications

from the National Fire Academy and the Department of Health and Human Services (DHHS), Institute for Occupational Safety and Health, were used. Extensive searches were conducted on the internet accessing web sites. Federal laws and Florida statutes were reviewed. Written information was also gathered from recognized training experts in public safety diving.

Survey Instruments

A survey was sent to random Florida fire chiefs to gain information pertaining to dive rescue. The survey (see Appendix) was faxed to 30 fire chiefs in Florida. The survey questions were objective in nature to ascertain what type of water and dive rescue services they provided and what resources were available. There was no other way to gain this information other than conducting this survey. Fire departments have not traditionally gathered such information and no literature was available other than several public safety dive team web sites posted on the internet. The survey questions were purposely written in a simple, direct manner to encourage a response. All surveys were faxed in return, except one respondent returned the information by telephone, using the survey format as the basis for discussion. The data compiled identified the different levels of services that are provided in fire departments that have bodies of water in their jurisdiction with the potential for drowning. The intended use of the objective data is subjective.

Assumptions and Limitations

The information available for this research project was limited and not easily assessable in any single forum. Literature available on dive rescue standards were generally included in technical rescue data, and was limited in nature. Federal standards on dive rescue for fire departments were not found. The NFPA standards did

not include information on professional standards for firefighter/paramedics performing dive rescue. Any reference to Dive Rescue International for this research was only made to present an example of dive training that is available and is not an endorsement or non endorsement of their products or services.

Definition and Clarification of Term

According to Florida Statute 861.065, *Offenses Related to Public Roads, Transport, and Waters* (1997), the term “Diver” means any person who is wholly or partially submerged in the waters of the state and is equipped with a face mask and snorkel or underwater breathing apparatus.

Definitions concerning water rescue incidents identified by NFPA 1670 (1999) are as follows:

Dive: An exposure to increased pressure whether underwater or in a hyperbaric chamber.

Dive Operation: A situation requiring divers to complete assigned tasks.

Dive Team: An organization of public safety divers and members in training.

Public Safety Diving: Underwater diving, related to team operations and training, performed by any member, group or agency of a community or government-recognized public safety diving and water rescue team.

Recovery Mode: Level of operational urgency where there is no chance of rescuing a victim alive.

Rescue Mode: A level of operational urgency where there is a chance that a victim will be rescued alive.

Risk/Benefit Analysis: A decision made by a responder based on a hazard and situation assessment that weighs the risks likely to be taken against the

benefits to be gained for taking those risks.

Technical Rescue: The application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations.

Technical Rescue Incident: Complex rescue incident requiring specially trained personnel and special equipment to complete the mission.

RESULTS

1. What federal regulations, Florida statutes, and NFPA standards are applicable to public safety dive rescue?

There were no federal regulations or Florida statutes that are applicable to public safety dive rescue. Federal regulations related to breathing apparatus, bloodborne pathogens, and confined space were found primarily relative to fire rescue. Although the Florida Statute does define the definition of a “diver” used by this writer, the standard was relating to the placement of dive warning flags for recognition of boaters. NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, 1999 Edition, identifies recommended practices for dive rescue. The purpose of the standard was to assist the authority having jurisdiction in assessing a technical rescue hazard with the response area, to identify the level of operational capability, and to establish operational criteria (NFPA, 1999). As with NFPA standards, they are recommended practices.

2. What training and certifications are needed to form a public safety dive team?

NFPA 1670 (1999) identified three distinct levels of training required by dive rescue teams: awareness, operations, and technician levels. The awareness level is basic training primarily relating to implementing the emergency response system and scene

management. The operations level is the next level of training aimed at persons who will directly assist the divers from a boat or land. Persons trained to the operations level actually assist and support the technical rescue incident. The technician level trained person are the divers entering the water and their supervisors (NFPA 1999).

Since the NFPA does not certify competencies, the certification, as approved by the authority having jurisdiction, is received from a training organization that certifies water rescuers to the competencies identified in NFPA 1670.

3. How do other fire rescue departments in Florida provide public safety dive rescue services?

The survey instrument (Appendix A) research revealed that 53% of those fire departments that responded to the survey provide their own dive rescue services and do not rely on another agency for that service. Of those fire departments that do it themselves, 88% had formalized training and certification, and 17% had water rescue teams that used masks and fins only, with no SCUBA. The survey indicated that 29% of the departments had dive rescue teams staffed 24 hours-a-day, 7 days-a-week. Also, the survey reflected that none of the fire departments that said they depended on another agency to provide their dive rescue services had training and SCUBA. See Appendix B for survey results.

4. What factors must public safety dive rescue personnel consider when conducting a hazard analysis and risk assessment?

Dive rescue personnel are exposed to significant hazards and risks when engaging in an active dive operation and during training. Hazard analysis and risk assessment of the dive area is always a factor to determine if a dive operation should take place (NFPA, 1999). Nemiroff (1992) reports the length of time the victim is without air and

the temperature of the water is of the utmost importance. In warm water neurological survival time is usually limited to a four to six minute airless period, and reports of long duration (greater than seven minutes) are mostly always limited to cold water (Nemiroff, 1992). Patients in cold water below 68 degrees F can be resuscitated after 30 minutes or more in cardiac arrest, however, persons under water for 60 minutes or longer usually cannot be resuscitated, (Bledsoe, Porter & Shade, 1997). The chances of survival for a near drowning in warm Florida water is less than in cold water. Dive teams in northern climates have better chances of rescuing and reviving victims.

DISCUSSION

Based on the research, the author found that there is a lack of information readily available for fire departments to determine the training and certification needed for public safety dive rescue personnel. The survey instrument (Appendix A) sent to Florida fire chiefs found that there are different levels of preparedness and appreciation between fire departments concerning dive rescue services (Appendix B). The lack of dive rescue service or the availability to get services should be a concern to those jurisdictions.

A dive rescue operation is a technical rescue incident (Comeau, 2000). NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents* (1999), identified three levels of dive rescue training for firefighters participating in a dive operation: awareness, operations, and technician. Personnel participating in the dive operation as boat or ground support activities should have this training, and the training can be conducted by the authority having jurisdiction. However, training to the technician level

for public safety divers must be conducted by a nationally recognized agency such as Dive Rescue International (1998) (NFPA 1999). The author agrees with Trueblood (2000) that a recreational diver may not be ready to function as a public safety rescue diver. Berry (2000) identifies that having an acceptable level of performance is imperative because it not only determines the success of a mission, it can be the determining factor between life and death as well. The author found that a firefighter drowned in 1999 during a dive training exercise (Fahy & LeBlanc, 2000). The DHHS (2000) report on the firefighter fatality stated the complexity of public safety diving cannot be underestimated.

A risk/benefit analysis is essential. Fleming (1993) reflected on his risk/benefit analysis of an attempt to save a victim that was most likely drowned. The concept of developing brain death in four to six minutes is reduced in cold water, and the cleanliness of the water affects survival (Bledsoe, Porter, & Shade, 1997). This must be considered when undertaking a dive operation to operate in a rescue mode. The victim may not be salvageable and a recovery mode may be appropriate. Nemiroff (1992) was clear on the comparison of survival between warm water drownings and cold water drownings. Florida water is warm which lessens the survival chances. This fact must be considered in the risk benefit analysis. The survey instruments sent to Florida fire chiefs reflected that one person in the last three years was saved in the fire departments surveyed for this research paper (Appendix B).

The results of the survey instrument (Appendix B) showed that some fire departments are extremely prepared for a dive rescue incident using their own resources and personnel and others depend on another agency to provide that service. Each jurisdiction must determine what services they can provide and what services they

must get from another agency. It is manpower intensive to have a public safety dive team on duty 24 hours-a-day, 7 days-a-week. However, each department should know their limitations and seek assistance when the incident is beyond their capability.

As identified in the survey, two departments reflected that they provide a dive rescue service, but had received no formal dive training or certification. Two others reflected that they provide their own dive rescue service, but had no SCUBA gear. Ultimately, these deficiencies in training and equipment are limiting factors for these departments.

RECOMMENDATIONS

Based upon this research the following recommendations are made for current organizations and future readers:

1. The National Fire Protection Association should establish a performance criteria for firefighter/paramedics that perform public safety dive rescue. As identified by DHHS (2000), the criteria should be included in NFPA Standard 1006, *Standard for Rescue Technician Professional Qualifications*. This will allow fire departments to realize that dive rescue physical requirements may be different than firefighter physical requirements.
2. Fire Departments that provide dive rescue services must insure that personnel training and certification meet the minimum requirements of NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*. As identified in the standard, the authority having jurisdiction shall ensure certification at the technician level by a nationally recognized agency.

Fire departments that depend on another agency to provide their dive rescue services should determine the training and certification level of the other

agencies' rescuers. Additionally, fire departments should ascertain whether the service provider is staffed 24 hours-a-day, 7 days-a-week, and the necessary equipment is available.

3. Fire departments with waters in their jurisdiction where there is a potential for drowning should ensure that all their personnel are trained to the operations level as identified in NFPA Standard 1670, *Standard on Operations and Training for Technical Rescue Incidents* (1999). These personnel may be called upon to serve as surface support personnel during a dive operation and will additionally be trained to provide a hazard analysis and risk assessment.

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APPENDIX A

SURVEY INSTRUMENT

APPENDIX B

SURVEY RESULTS

Survey Results

Florida Fire Chiefs

August 2000

2. Are there lakes, rivers, canals, ponds, or waterways in your jurisdiction with the potential for drowning?

100% of the fire chiefs answered yes.

4. Does your Department primarily depend on water and dive rescue emergency response services from another fire rescue agency?

53% of the fire departments surveyed provide their own dive rescue services.

5. Has your Department received formal water rescue and dive rescue training and certification from an independent or private training organization?

88% of fire departments that provide their own service were formally trained.

4. Do you have a water rescue team using mask and fins only?

17% of fire department surveyed used mask and fins only, no SCUBA.

6. Does your department have a dive rescue team equipped with SCUBA?

35% of the fire departments have SCUBA gear.

7. Do dive rescue crew members staff the same vehicle together during a duty shift?

22% of departments that provide dive services staff the crew on the same vehicle.

8. Is the dive rescue team manned 24 hours a day, 7 days a week?

29% of the dive teams are staffed 24/7.

8. How many people make-up your minimum dive rescue crew? _____

35% of departments identified a minimum crew, four persons was average.

10. In the last three years, how many drowning victims has your dive rescue team (using SCUBA) successfully retrieved and revived to make a full recovery? _____

One fire department reported that one drowning victim was revived.

10. Approximately how much money do you budget annually for dive rescue? _____

35% of the departments identified a budget, \$6,100 was average.

